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Quality changes in krill products during their manufacturing process: the effect of temperature

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The main objective of this study is to a) investigate the effect of temperature towards the non-enzymatic browning reactions and lipid oxidation in krill products sampled at different stages during their manufacturing process. In order to further investigate this, a simple model system comprising amino acids (leucine, isoleucine, valine, methionine and lysine) was prepared with addition of lipid (saturated and α, β-unsaturated aldehydes) or non-enzymatic (Strecker aldehydes and pyrazine) derived volatiles. Therefore, the secondary objective is to investigate if the occurrence of non-enzymatic browning reactions in krill products was due to the presence of carbonyl compounds degraded from lipid oxidation, and if the presence of a high level of non-enzymatic products would affect the formation of pyrroles. Characterisation of krill products sampled at different stages was made by determining the lipid composition, antioxidant content and volatile profile. Non-enzymatic browning development in model system was investigated through the measurement of volatile, pyrroles, free amino acid content and browning development (YI). The use of thermal treatment could cause the development of non-enzymatic browning reactions and lipid oxidation in krill products during their manufacturing process. The occurrence of these reactions could be observed in krill meal and this was ascribed to the presence of carbonyl compounds derived lipid oxidation products. The presence of a high level of non-enzymatic degradation products in krill products could enhance the pyrrolisation.